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009492706 **Image available**
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Communication control system - has circuit controller for selecting low
or high speed communication systems according to communication data rate
NoAbstract

Patent Assignee: NEC CORP (NIDE)
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COMMUNICATION CONTROL SYSTEM

PUB. NO.: 05-114913 [JP 5114913 A]
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APPLICANT(s): NEC CORP [000423] (A Japanese Company or Corporation), JP
(Japan)
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ABSTRACT

PURPOSE: To realize high speed and low connection cost communication by
combining a low cost low speed communication system always connected with a
high connection cost high speed communication system.

CONSTITUTION: A terminal equipment 1 is provided with two types of
communication system: the low cost low speed communication system and the
high connection cost high speed communication system. A low speed
communication control means 11 performs the communication by means of the
low speed communication system; while a high speed communication control
means 12 perform the communication by means of the high speed communication
system. A communication data amount measurement means 13 measures the
amount of communication data per a prescribed period of time, and a line
control means 14 connects and disconnects the communication by means of the
high speed communication system corresponding to the amount of

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communication data.

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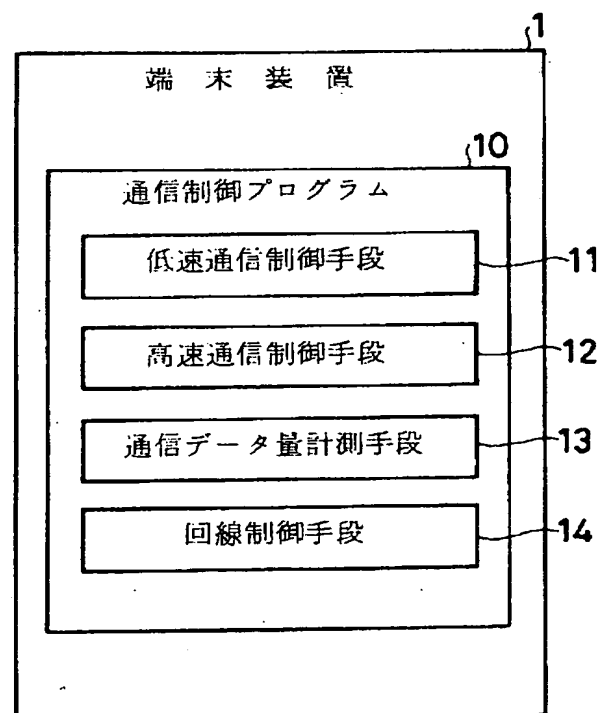
(74)代理人 弁理士 河原 純一

(54)【発明の名称】 通信制御方式

(57)【要約】

【目的】 常時接続されている低コストな低速通信方式と接続コストの高い高速通信方式との組み合わせにより、高速かつ低コストな通信を実現する。

【構成】 常時接続されている低コストな低速通信方式および接続コストの高い高速通信方式との2種類の通信方式を有する端末装置の通信制御方式において、低速通信制御手段 1 1 は低速通信方式により通信を行い、高速通信制御手段 1 2 は高速通信方式により通信を行い、通信データ量計測手段 1 3 は一定時間当たりの通信データ量を測定し、回線制御手段 1 4 は通信データ量に応じて高速通信方式による通信の接続と切断とを行う。



【特許請求の範囲】

【請求項1】 常時接続されている低コストな低速通信方式と接続コストの高い高速通信方式との2種類の通信方式を有する端末装置の通信制御方式において、低速通信方式により通信を行う低速通信制御手段と、高速通信方式により通信を行う高速通信制御手段と、一定時間当たりの通信データ量を測定する通信データ量計測手段と、この通信データ計測手段により測定された通信データ量に応じて高速通信方式による通信の接続と切断とを行う回線制御手段とを有することを特徴とする通信制御方式。

【発明の詳細な説明】

【0001】

【産業上の利用分野】 本発明は通信制御方式に関し、特に通信データ量の変化に伴って通信方式を変更させる通信制御方式に関する。

【0002】

【従来の技術】 従来、この種の通信制御方式では、低速または高速のどちらか一種類の通信制御方式を使用して通信を行っていた。

【0003】

【発明が解決しようとする課題】 上述した従来の通信制御方式では、低コストな低速通信方式か接続コストの高い高速通信方式かのどちらか一方でしか通信が行えなかったため、通信データ量にばらつきのある場合に、通信速度と通信コストとが相反するという欠点があった。

【0004】 本発明の目的は、上述の点に鑑み、常時接続されている低コストな低速通信方式と接続コストの高い高速通信方式との組合せにより、通信速度と通信コストとのバランスの採れた通信制御方式を提供することにある。

【0005】

【課題を解決するための手段】 本発明の通信制御方式は、常時接続されている低コストな低速通信方式と接続コストの高い高速通信方式との2種類の通信方式を有する端末装置の通信制御方式において、低速通信方式により通信を行う低速通信制御手段と、高速通信方式により通信を行う高速通信制御手段と、一定時間当たりの通信データ量を測定する通信データ量計測手段と、この通信データ量計測手段により測定された通信データ量に応じて高速通信方式による通信の接続と切断とを行う回線制御手段とを有する。

【0006】

【作用】 本発明の通信制御方式では、低速通信制御手段が低速通信方式により通信を行い、高速通信制御手段が高速通信方式により通信を行い、通信データ量計測手段が一定時間当たりの通信データ量を測定し、回線制御手段が通信データ量計測手段により測定された通信データ量に応じて高速通信方式による通信の接続と切断とを行

う。

【0007】

【実施例】 次に、本発明について図面を参照して詳細に説明する。

【0008】 図1は、本発明の一実施例に係る通信制御方式が適用された端末装置1の通信制御プログラム10の構成を示すブロック図である。この通信制御プログラム10は、低速通信制御手段11と、高速通信制御手段12と、通信データ量計測手段13と、回線制御手段14とを含んで構成されている。

【0009】 本実施例の通信制御方式では、図2に示すように、端末装置1が通信ネットワーク22に低速通信方式23のみで接続され、高速通信方式24とは切断された状態(図2(A)参照)と、端末装置1が通信ネットワーク22に低速通信方式23および高速通信方式24の両方で接続されている状態(図2(B)参照)とがある。

【0010】 通信データ量がしきい値以下の場合には、図2(A)に示すように、通信は常時接続されていて従量制で課金されるパケット交換網等での低速通信方式23により行われる。

【0011】 例えば、端末装置1の状態の通知などの短いメッセージ場合には、一定時間当たりのTCP(Transmission Control Protocol)/IP(Internet Protocol)におけるIPパケット数などで計測されるような通信データ量がしきい値以下であるため、低速通信方式23が使用される。

【0012】 通信データ量がしきい値以上の場合には、図2(B)に示すように、通信は低速通信方式23および接続時間に対して課金されるデジタル回線交換網のような高速通信方式24により行われる。

【0013】 例えば、ファイル転送などの通信データ量の大きな処理を起動した場合には、一定時間当たりの通信データ量が増加するため、所定のしきい値以上となり、回線交換の呼制御手順により、高速通信方式24による接続が行われる。

【0014】 ファイル転送が終了し、一定時間当たりの通信データがしきい値以下に減少した場合は、高速通信方式24による接続を切断する。

【0015】 なお、高速通信方式24による接続の切断後も、低速通信方式23による接続は継続していて、短いメッセージ通信が途切れることなく、通信データ量が増加した場合には再び高速通信方式24による接続が再開される。

【0016】 図3を参照すると、本実施例の通信制御方式の処理は、低速通信方式によるデータ通信ステップ31と、通信データ量の計測ステップ32と、通信データ量判断ステップ33と、高速通信方式接続済み判断ステップ34と、高速通信方式接続ステップ35と、高速通

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信方式によるデータ通信ステップ36と、高速通信方式接続済み判断ステップ37と、高速通信方式切断ステップ38とからなる。

【0017】次に、このように構成された本実施例の通信制御方式の動作について説明する。

【0018】まず、端末装置1の通信制御プログラム10は、低速通信制御手段11により常時接続されている低速通信方式23でデータ通信を行う（ステップ31）。

【0019】次に、通信制御プログラム10は、通信データ量計測手段13により一定時間当たりの通信データ量の計測を行い（ステップ32）、通信データ量が所定のしきい値を越えているか否かを判定する（ステップ33）。

【0020】ステップ33で、通信データ量がしきい値を越えている場合は、通信制御プログラム10は、高速通信方式24で既に接続されているか否かを判定する（ステップ34）。

【0021】ステップ34で、高速通信方式24で接続されていない場合は、通信制御プログラム10は、回線制御手段14により高速通信方式24で接続し（ステップ25）、高速通信制御手段12により高速通信方式24によるデータ通信を行って（ステップ36）、ステップ33に制御を戻す。

【0022】ステップ34で、高速通信方式24で接続されている場合には、通信制御プログラム10は、ステップ35をスキップしてステップ36の処理に進む。

【0023】ステップ33で、通信データ量がしきい値を越えていない場合は、通信制御プログラム10は、高速通信方式24で既に接続されているか否かをチェックする（ステップ37）。

【0024】ステップ37で、高速通信方式24で接続

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されている場合は、通信制御プログラム10は、回線制御手段14により高速通信方式24を切断し（ステップ38）、ステップ31に制御を戻して上述の処理を繰り返す。

【0025】ステップ37で、高速通信方式24で接続されていない場合は、通信制御プログラム10は、ステップ31に制御を戻して上述の処理を繰り返す。

【0026】

【発明の効果】以上説明したように本発明は、低コストな低速通信方式による接続は常時行われ、接続コストの高い高速通信方式による接続は通信データ量が増加したときにのみ行われるため、通信データ量にばらつきのあっても通信速度と通信コストとが相反することがなくなり、高速かつ低コストの通信を実現することができるという効果がある。

【図面の簡単な説明】

【図1】本発明の一実施例に係る通信制御方式の構成を示すブロック図である。

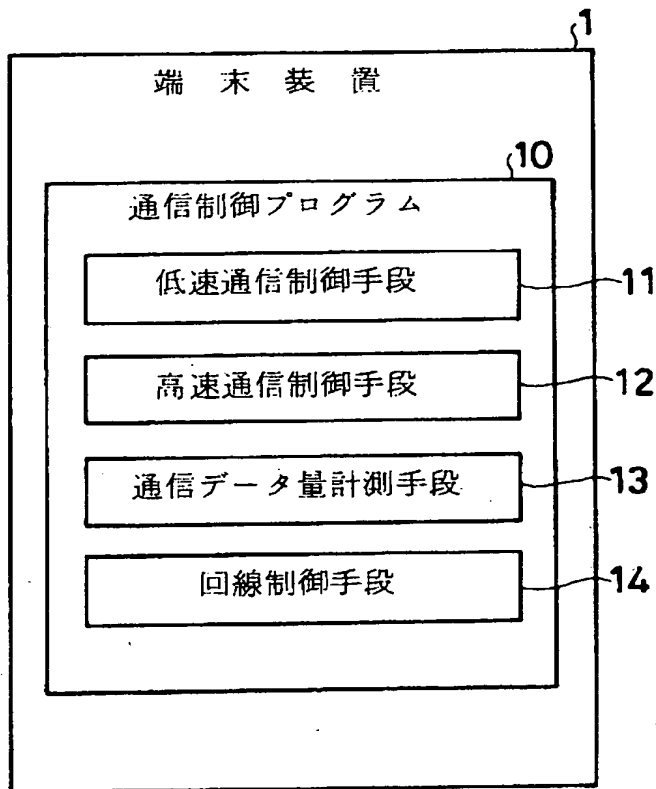
【図2】図1中の端末装置と通信ネットワークとの接続関係を表した図である。

【図3】本実施例の通信制御方式の処理を示す流れ図である。

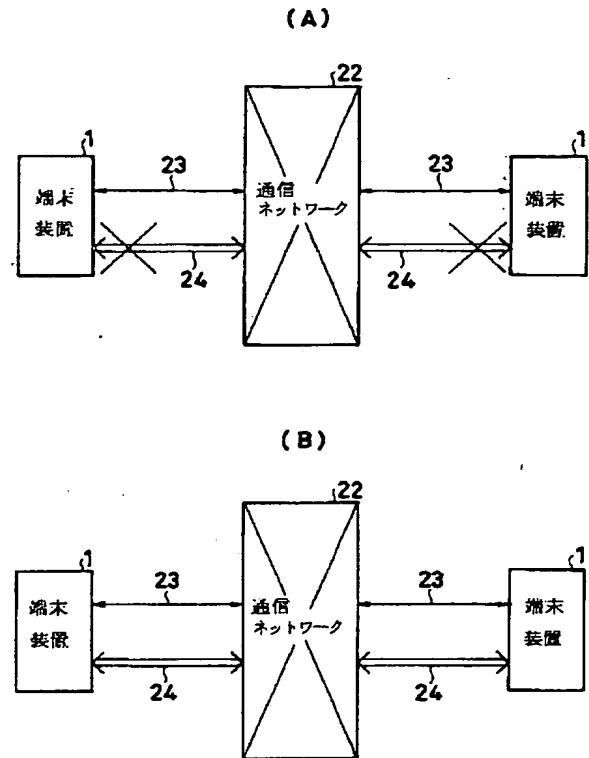
【符号の説明】

- 1 端末装置
- 10 通信制御プログラム
- 11 低速通信制御手段
- 12 高速通信制御手段
- 13 通信データ量計測手段
- 14 回線制御手段
- 22 通信ネットワーク
- 23 低速通信方式
- 24 高速通信方式

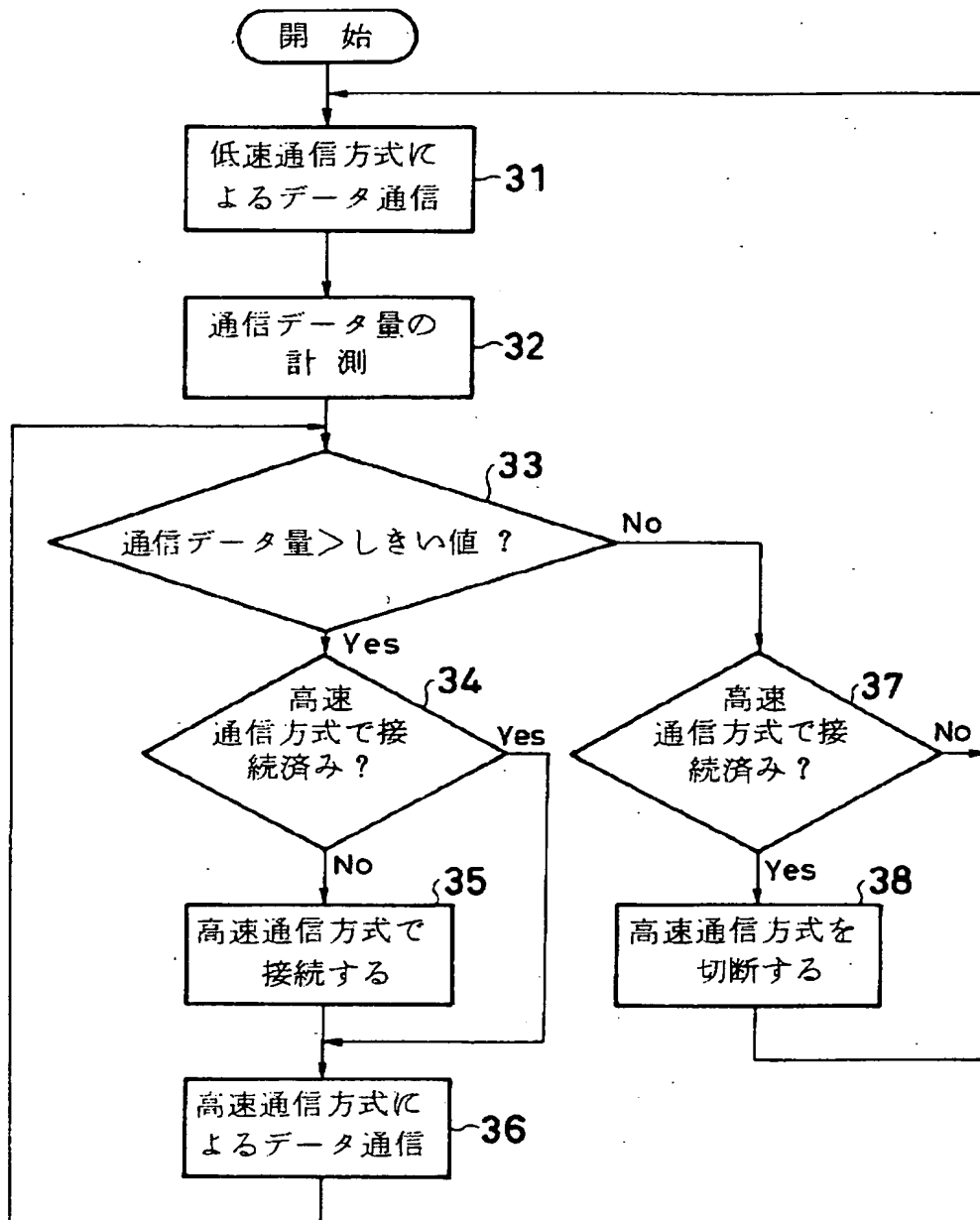
【図1】



【図2】



【図3】



First Hit**End of Result Set**

L4: Entry 2 of 2

File: DWPI

May 7, 1993

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DERWENT-WEEK: 199323

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TITLE: Communication control system - has circuit controller for selecting low or high speed communication systems according to communication data rate NoAbstract

PATENT-ASSIGNEE: NEC CORP (NIDE)

PRIORITY-DATA: 1991JP-0301136 (October 21, 1991)

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PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<input type="checkbox"/> JP 05114913 A	May 7, 1993		005	H04L012/48

APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
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INT-CL (IPC): H04L 12/48; H04L 29/08

CHOSEN-DRAWING: Dwg.1/3

DERWENT-CLASS: T01 W01

EPI-CODES: T01-H07C; W01-A06E; W01-A06F; W01-A07F; W01-A07G;

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H04L 29/08

(21)Application number : 03-301136

(71)Applicant : NEC CORP

(22)Date of filing : 21.10.1991

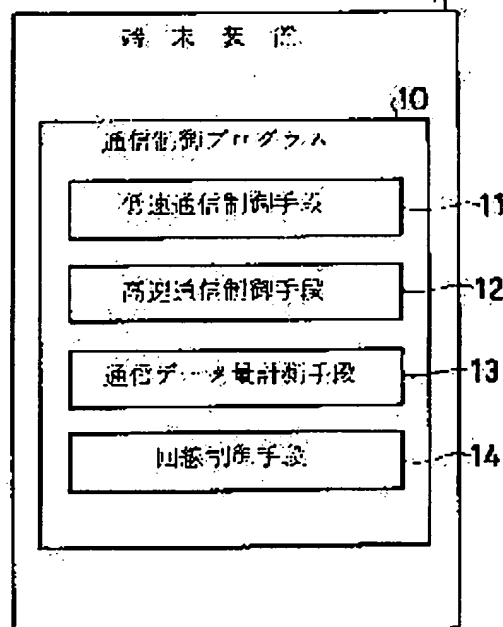
(72)Inventor : MORIYAMA SEIJI

(54) COMMUNICATION CONTROL SYSTEM

(57)Abstract:

PURPOSE: To realize high speed and low connection cost communication by combining a low cost low speed communication system always connected with a high connection cost high speed communication system.

CONSTITUTION: A terminal equipment 1 is provided with two types of communication system: the low cost low speed communication system and the high connection cost high speed communication system. A low speed communication control means 11 performs the communication by means of the low speed communication system; while a high speed communication control means 12 perform the communication by means of the high speed communication system. A communication data amount measurement means 13 measures the amount of communication data per a prescribed period of time, and a line control means 14 connects and disconnects the communication by means of the high speed communication system corresponding to the amount of communication data.



LEGAL STATUS

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CLAIMS

[Claim(s)]

[Claim 1] In the communications control method of the terminal unit which has two kinds of communication modes of the low cost low-speed communication mode and the high-speed high communication mode of connection cost which are always connected The low-speed communications control means which communicates by the low-speed communication mode, and the high-speed communications control means which communicates by the high-speed communication mode, The communications control method characterized by having a line control means to perform the communicative connection and communicative cutting by the high-speed communication mode according to the communication link amount of data measured by communication link amount-of-data measurement means to measure the communication link amount of data per fixed time amount, and this commo data measurement means.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the communications control method which makes a communication mode change especially with change of the communication link amount of data about a communications control method.

[0002]

[Description of the Prior Art] Conventionally, by this kind of communications control method, it was communicating using one kind of one of the communications control methods of a low speed or a high speed.

[0003]

[Problem(s) to be Solved by the Invention] By the conventional communications control method mentioned above, since it communicated by either the low cost low-speed communication mode or the high-speed high communication mode of connection cost, when dispersion was in the communication link amount of data, there was a fault that transmission speed and communication link cost conflicted.

[0004] The purpose of this invention is to offer the communications control method which was able to take balance with transmission speed and communication link cost in view of an above-mentioned point with the combination of the low cost low-speed communication mode and high-speed high communication mode of connection cost which are always connected.

[0005]

[Means for Solving the Problem] In the communications control method of the terminal unit which has two kinds of communication modes of the low cost low-speed communication mode and the high-speed high communication mode of connection cost to which the communications control method of this invention is always connected The low-speed communications control means which communicates by the low-speed communication mode, and the high-speed communications control means which communicates by the high-speed communication mode, It has a line control means to perform the communicative connection and communicative cutting by the high-speed communication mode according to the communication link amount of data measured by communication link amount-of-data measurement means to measure the communication link amount of data per fixed time amount, and this communication link amount-of-data measurement means.

[0006]

[Function] By the communications control method of this invention, the communicative connection and communicative cutting by the high-speed communication mode are performed according to the communication link amount of data by which the low-speed communications control means communicated by the low-speed communication mode, the high-speed communications control means communicated by the high-speed communication mode, the communication link amount-of-data measurement means measured the communication link amount of data per fixed time amount, and the line control means was measured with the communication link amount-of-data measurement means.

[0007]

[Example] Next, this invention is explained to a detail with reference to a drawing.

[0008] Drawing 1 is the block diagram showing the configuration of the communication control program 10 of the terminal unit 1 with which the communications control method concerning one example of this invention was applied. This communication control program 10 is constituted including the low-speed communications control means 11, the high-speed communications control means 12, the communication link amount-of-data measurement means 13, and the line control means 14.

[0009] By the communications control method of this example, as shown in drawing 2, a terminal unit 1 is connected to a communication network 22 only by the low-speed communication mode 23, and there are a condition (refer to drawing 2 (A)) of having been cut in the high-speed communication mode 24, and the condition (refer to drawing 2 (B)) that the terminal unit 1 is connected to the communication network 22 by both the low-speed communication mode 23 and the high-speed communication mode 24.

[0010] When the communication link amount of data is below a threshold, a communication link is performed by the low-speed communication mode 23 in the packet exchange network with which it always connects and which is charged by the connection time based fee as shown in drawing 2 (A).

[0011] For example, since the communication link amount of data which is measured with the number of IP packets in TCP (Transmission Control Protocol)/IP per fixed time amount (Internet Protocol) etc. is below a threshold, the low-speed communication mode 23 is used for a short message case, such as a notice of the condition of a terminal unit 1.

[0012] When the communication link amount of data is more than a threshold, a communication link is performed by high-speed communication mode 24 like the digital channel switched network charged to the low-speed communication mode 23 and a connect time as shown in drawing 2 (B).

[0013] For example, since the communication link amount of data per fixed time amount increases when big processing of the communication link amounts of data, such as a file transfer, is started, it becomes more than a predetermined threshold and connection by the high-speed communication mode 24 is made by the call control procedure of line switching.

[0014] When a file transfer is completed and the commo data per fixed time amount decreases in number below to a threshold, connection by the high-speed communication mode 24 is cut.

[0015] In addition, without after cutting of connection by the high-speed communication mode 24 continuing the connection by the low-speed communication mode 23, and short messaging breaking off, when the communication link amount of data increases, connection by the high-speed communication mode 24 is resumed again.

[0016] If drawing 3 is referred to, processing of the communications control method of this example will consist of the data communication step 31 by the low-speed communication mode, the measurement step 32 of the communication link amount of data, the communication link amount-of-data decision step 33, the connected [high-speed communication-mode] decision step 34, the high-speed communication-mode connection step 35, the data communication step 36 by the high-speed communication mode, a connected [high-speed communication-mode] decision step 37, and a high-speed communication-mode cutting step 38.

[0017] Next, actuation of the communications control method of this example constituted in this way is explained.

[0018] First, the communication control program 10 of a terminal unit 1 performs data communication by the low-speed communication mode 23 always connected by the low-speed communications control means 11 (step 31).

[0019] Next, a communication control program 10 measures the communication link amount of data per fixed time amount with the communication link amount-of-data measurement means 13 (step 32), and the communication link amount of data judges whether it is over the predetermined threshold (step 33).

[0020] At step 33, when the communication link amount of data is over the threshold, it judges whether the communication control program 10 is already connected by the high-speed communication mode 24 (step 34).

[0021] At step 34, when not connecting by the high-speed communication mode 24, it connects by the

high-speed communication mode 24 with the line control means 14 (step 25), and a communication control program 10 performs data communication by the high-speed communication mode 24 with the high-speed communications control means 12 (step 36), and returns control to step 33.

[0022] At step 34, when connecting by the high-speed communication mode 24, a communication control program 10 skips step 35, and progresses to processing of step 36.

[0023] At step 33, when the communication link amount of data is not over the threshold, it is confirmed whether the communication control program 10 is already connected by the high-speed communication mode 24 (step 37).

[0024] At step 37, when connecting by the high-speed communication mode 24, a communication control program 10 cuts the high-speed communication mode 24 with the line control means 14 (step 38), returns control to step 31, and repeats above-mentioned processing.

[0025] At step 37, when not connecting by the high-speed communication mode 24, a communication control program 10 returns control to step 31, and repeats above-mentioned processing.

[0026]

[Effect of the Invention] As explained above, connection by the low cost this invention low-speed communication mode is always made, since connection by the high-speed high communication mode of connection cost is made only when the communication link amount of data increases, even when dispersion is in the communication link amount of data, it is lost that transmission speed and communication link cost conflict of it, and it is effective in the communication link of a high speed and low cost being realizable.

[Translation done.]

* NOTICES *

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3. In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing the configuration of the communications control method concerning one example of this invention.

[Drawing 2] It is drawing showing the connection relation between the terminal unit in drawing 1 , and a communication network.

[Drawing 3] It is the flow chart showing processing of the communications control method of this example.

[Description of Notations]

1 Terminal Unit

10 Communication Control Program

11 Low-speed Communications Control Means

12 High-speed Communications Control Means

13 Communication Link Amount-of-Data Measurement Means

14 Line Control Means

22 Communication Network

23 Low-speed Communication Mode

24 High-speed Communication Mode

[Translation done.]

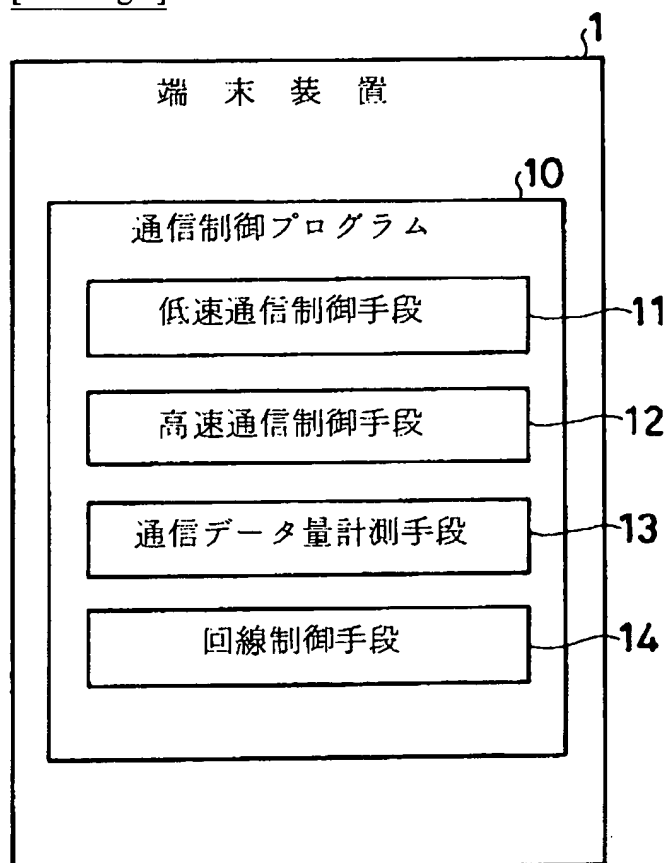
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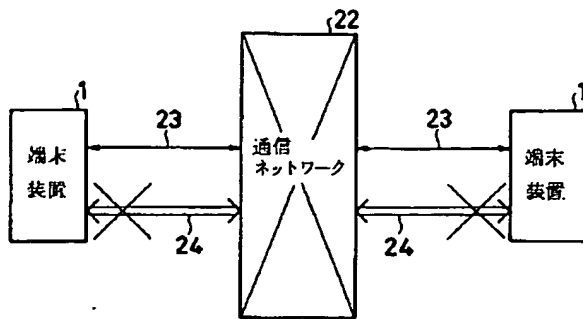
DRAWINGS

[Drawing 1]

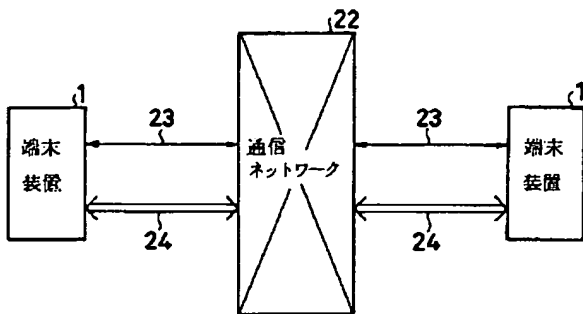


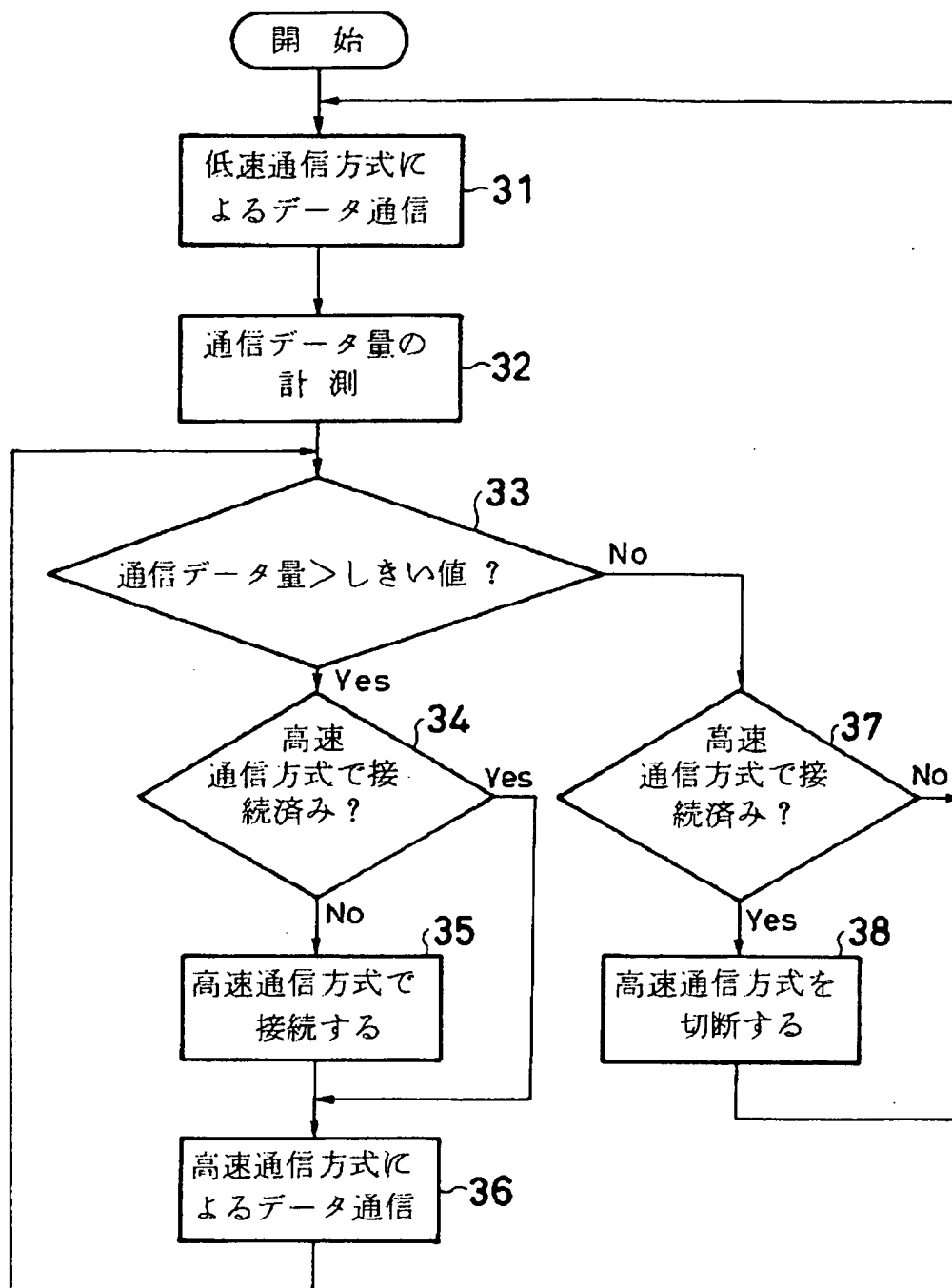
[Drawing 2]

(A)



(B)

[Drawing 3]



[Translation done.]